

PRIORITIES IN CHILD HEALTH

Easily digestible information for
health workers on managing
the young child



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BOOKLET 4
DIARRHOEAL DISEASE

FOREWORD

This series of booklets is a course of self-based learning on the comprehensive management of the sick infant and young child. It is intended for use by first level health workers who, in South Africa, are generally nurses. The principles used are based on the World Health Organisation strategy "Integrated Management of Childhood Illness (IMCI)". For those who have not yet benefitted from full IMCI training, the booklets provide specific information on important elements of child health care that each nurse should know and use. As her knowledge and experience expands, she will increasingly approach each child in the comprehensive manner promoted in this series. The booklets are not intended as a substitute for existing training programmes, but rather as an adjunct to such learning.

Short case studies are employed to illustrate problems to be discussed in each section.

Introduction to comprehensive management

<i>Booklet 1</i>	<i>Underlying principles</i>
	<i>The Road to Health Chart</i>
	<i>Nutrition</i>
	<i>Maternal well-being</i>
<i>Booklet 2</i>	<i>Immunisation</i>

Management of the sick child under 5 years

<i>Booklet 3</i>	<i>Acute respiratory infection</i>
<i>Booklet 4</i>	<i>Diarrhoeal disease</i>
<i>Booklet 5</i>	<i>Promoting healthy growth</i>

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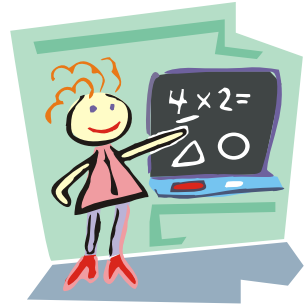
After reading this booklet the learner should :

- be able to recognise and treat the different classifications of dehydration
- be able to teach the mother how to manage diarrhoea at home
- be able to recognise the common complications of diarrhoeal illness
- have a broad understanding of the causes of infectious diarrhoea
- understand the principles in lessening diarrhoeal disease as a community problem

Before you start, why not test your knowledge by answering the following questions!

QUESTIONS ON BOOKLET 4

Are the following statements true or false? If false, correct them!



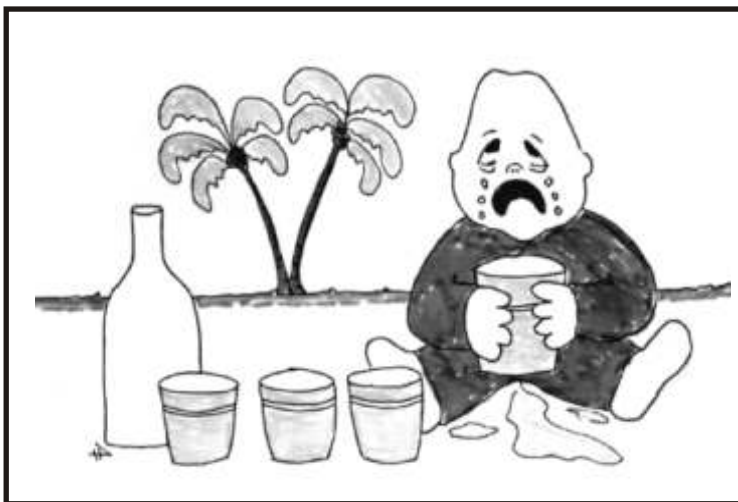
1. A homemade sugar and salt solution should contain eight level teaspoonfuls of sugar and one teaspoon of salt per litre of water.
2. A child who is drinking eagerly is unlikely to have severe dehydration.
3. A child with some dehydration shows sunken eyes and a dry mouth.
4. When managing diarrhoea at home, mother should give ORS for 12 hours instead of milk feeds.
5. Kaolin mixtures are useful in stopping diarrhoea.
6. Certain enemas may cause severe illness.
7. ORS is sufficient to replace fluids and salts in moderate dehydration.
8. Ringer's lactate or normal saline are given intravenously in severe dehydration.
9. A slow pulse is a usual sign in shock.
10. When shock is present intravenous fluids are essential.
11. An ear infection may cause diarrhoea.
12. Ascaris worms may cause blood in the stools.
13. A child with diarrhoea should be referred if below the third centile in weight.
14. Persistent diarrhoea is common in giardia infection.
15. Nalidixic acid is effective treatment for shigella dysentery.

Answers on page 29

DIARRHOEAL DISEASE

WHAT IS DIARRHOEAL DISEASE?

Diarrhoea means abnormally frequent or liquid bowel movements. Diarrhoea may have many causes and can occur at any age. In this booklet we are dealing mainly with acute infectious diarrhoea and its consequences. Acute infectious diarrhoea, or gastroenteritis, is an infection of the gut by various harmful bacteria, viruses or other organisms. Over 95% of cases of acute diarrhoea are of this type. It is a very common illness world-wide, and in developing countries is a major cause of death, particularly in the very young. In the poorest communities of South Africa, it is the major single cause of death of young children.



WHY IS ACUTE INFECTIOUS GASTROENTERITIS SUCH AN IMPORTANT CAUSE OF DEATH?

- The major cause of death is dehydration, resulting from loss of fluid and salts (electrolytes).
- Repeated attacks affect the child's growth and development.
- Repeated attacks cause a deterioration in the nutritional state, which in turn leads to further recurrences of diarrhoea.

WHY SHOULD DIARRHOEA BE MORE COMMON IN POORER COMMUNITIES?

- Because of contamination of the environment in these communities. There are:
 - inadequate or unhygienic water supplies,
 - inadequate or non-existent sanitary facilities and over-crowded housing.
- Because of transmission to the individual:
 - poor domestic and personal hygiene,
 - lack of education,
 - bottle rather than breast-feeding, and
 - improper preparation and storage of weaning foods all play a part.
- Malnutrition, by depressing the body's defence mechanisms, and infection outside the gastro-intestinal tract (parenteral disease), may also cause diarrhoea.

DO PARASITES CAUSE DIARRHOEAL DISEASE?

Fewer than 5% of cases of diarrhoea are caused by parasites. The most important parasites causing diarrhoea are all protozoa (single-celled organisms).

- *Entamoeba histolytica*, affects the large bowel, causing loose, mucoid bloody stools - amoebic dysentery. The disease is of varying severity, and infection occasionally spreads to the liver.
- *Giardia lamblia* affects the small bowel. It causes watery diarrhoea in the first attack. With chronic infection the damage to the small bowel results in malabsorption (frothy, fatty stools) and failure to thrive.
- *Cryptosporidium* causes long-continued watery diarrhoea. It is a common infection in children who are immune-suppressed, and especially in the HIV infected.

These conditions are seen as chronic diarrhoea, lasting over two weeks, and can only be diagnosed with a stool test.

REFER all children with diarrhoea lasting 14 days or more.

ASSESSMENT OF DIARRHOEA

You are a nurse at a small health facility 75 kms from a town. Mrs Moyo brings her daughter Sandra, aged 13 months to the health facility because the child is passing loose, frequent stools.

WHAT ARE THE IMPORTANT STEPS IN ASSESSING SANDRA?



DANGER SIGNS

WHAT ARE THE GENERAL DANGER SIGNS?

ASK -

- Is Sandra not able to drink or breastfeed?
- Does she vomit everything ?
- Has she had convulsions ?

LOOK -

- Is Sandra lethargic or unconscious ?
- Is she convulsing at present?

A CHILD WITH ANY DANGER SIGN NEEDS URGENT ATTENTION AND REFERRAL

Sandra does not show any danger signs.

THE MAIN DANGER IN DIARRHOEAL DISEASE IS LOSS OF FLUIDS AND SALTS. HOW WOULD YOU ASSESS SANDRA FOR DEHYDRATION?

Decide whether she has :

- Severe dehydration
- Some dehydration
- No dehydration



HOW DO YOU DO THIS?

How long has Sandra had diarrhoea?

- Offer her fluids to drink to assess her thirst
 - Is she able to drink? Is she thirsty? Thirst is an early sign of dehydration.
- Is there blood in the stools?
 - Blood is a sign of dysentery.

LOOK -

- Are the eyes sunken?
- Dry mouth and tongue?
- Tears lessened?
- Breathing deep and rapid?
 - Because the blood is more acid than usual.

FEEL -

- Pinch the skin of the chest wall and then let go.
 - How quickly does the skin go back?
- If the child is not dehydrated the fold of skin flattens immediately.
- If there is some dehydration the fold takes a second or two to disappear.
- If there is severe dehydration, the fold stays raised for several seconds.
- Pinch a finger tip;
 - How quickly does colour come back?



The colour should return quickly if the blood circulation is good. If it takes four seconds or longer to return, circulation is very poor, or the child is in shock.

- Take the pulse at the wrist, the ankle, or femoral area;
 - Can you feel it ?

The pulse rate in small children normally shows wide variations. If it is very fast (above 140/minute) this is often a sign of dehydration.

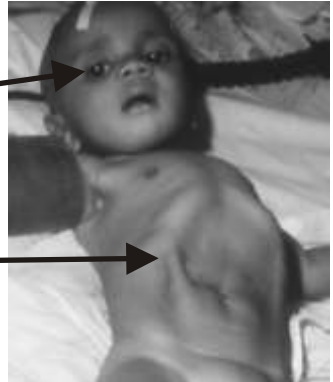
A very slow pulse may also be a sign of serious illness.

An absent pulse is an even more serious sign!

HOW DO YOU INTERPRET THESE FINDINGS?

In a child with severe dehydration there are two or more of the following:

- Lethargic or unconscious
- Sunken eyes
- Not able to drink, or drinks poorly
- Delayed return of finger colour
- Skin pinch goes back very slowly



In a child with some dehydration there are two of the following:

- Restless, irritable.
- Sunken eyes, less tears, dry mouth.
- Drinks eagerly, thirsty.
- Skin pinch goes back slowly.
- Pulse may be rapid.
- Breathing normal.

In a child with no visible dehydration:

- The child drinks normally (but may be irritable and fussy).
- Urine is passed in normal amounts.
- The mouth is moist, tears are normal.
- The skin goes back quickly when pinched up.
- The pulse is not rapid.
- The breathing is normal.

ARE THERE OTHER SYMPTOMS? A COUGH? FEVER? EAR PAIN?



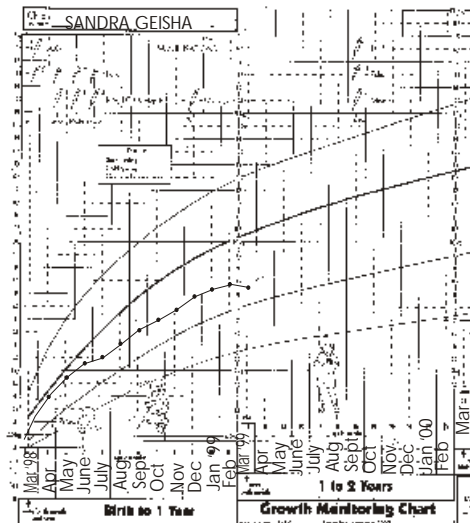
- Look at the palms and conjunctivae for signs of anaemia (See Booklet 5).
- Weigh the child and plot the weight on the RTH Chart.

WHY IS THIS IMPORTANT?

A child with severe dehydration has lost so much fluid that the body weight may have dropped 10-15%. Existing malnutrition may be greatly worsened by a diarrhoeal illness. Also the attack of diarrhoea may be more severe or prolonged in a malnourished child.

(See Booklet 5 Promoting Healthy Growth)

- ✓ Sandra is alert and lying quietly.
- ✓ She is drinking well. She is thirsty.
- ✓ She is passing urine as usual.
- ✓ She is breathing normally at a rate of 36/minute.
- ✓ Her eyes are not sunken.
- ✓ The tongue is not dry.
- ✓ I cannot feel the fontanelle.
- ✓ On pinching it the skin goes back quickly.
- ✓ The colour comes back to the finger tips in less than 1 second.
- ✓ Her palms are not very pale.
- ✓ I can feel the pulse. It is 120/minute.
- ✓ Her weight on her RTH chart was 9.8 kg one month ago; today she weighs 9.7 kg.



HOW WOULD YOU CLASSIFY SANDRA?

Sandra has no danger signs. She has diarrhoea with no dehydration.

She has no anaemia and not very low weight.

Her weight shows normal growth - the loss of 100 grams is likely due to acute diarrhoea.

QUITE RIGHT! WHAT ELSE WOULD YOU ASK?

- **For how long has Sandra had the loose stools?**
They have been loose for one week.
- **Is she vomiting ?**
She vomited a few times when she first got sick, but this stopped.
- **How is she being fed?**
She was breastfed for 11 months, but then the milk stopped and I gave her boiled cow's milk. She was also taking porridge and vegetables until she became ill. Now she is just drinking only weak tea.
- **Is there blood in the stool?**
There is no blood in the stools.
- **Is Sandra getting any treatment?**
She is taking a medicine I bought at the chemist.



TREATMENT OF MILD DIARRHOEA

WHAT IS YOUR MANAGEMENT PLAN FOR MILD DIARRHOEA, WITH NO OBVIOUS DEHYDRATION?

Sandra can be treated at home.

Her mother must be shown how to:

- give her fluid, and
- what to feed her.



WHAT FLUIDS WOULD YOU RECOMMEND?

ORAL REHYDRATION SOLUTION (ORS)

Oral rehydrating solution (ORS) can be obtained ready-mixed in packets.

- ◆ These packets, when added to the correct amount of clean, preferably boiled, cooled water, contain just the right amount of salts and sugar.
- ◆ ORS packets are the preferred method of correcting fluid losses and should always be available at your health facility.
- ◆ To mix, follow the manufacturer's instructions. One packet is generally added to one litre of water.

HOME-MADE SUGAR AND SALT SOLUTION (SSS)

- ◆ A disadvantage of the ORS packets is that they may not be available in the home.
- ◆ Parents and caregivers should be given the knowledge and confidence to be able to use simple ingredients available in every household for the prevention of dehydration.
- ◆ A simple method of giving fluids in the home is mixing a sugar and salt solution (SSS).
- ◆ 8 **level** teaspoonsfull of sugar, and $\frac{1}{2}$ a teaspoon of table salt in 1 litre of water (preferably boiled and allowed to cool).



HOW SHOULD MOTHER TREAT THE DIARRHOEA AT HOME?

We will call this PLAN A

Teach the mother the four rules of home treatment:

- Step 1. Give extra fluid.
- Step 2. Continue feeding in frequent small amounts.
- Step 3. Advise her when to return immediately.
- Step 4. Monitor Sandra's weight after recovery.

PLAN A

TREATING DIARRHOEA AT HOME

STEP 1. GIVE EXTRA FLUID (as much as the child will take)

- ◆ Tell the mother:
 - ✓ Breastfeed frequently and for longer each feed.
 - ✓ If not only on breast, give breast or usual milk.
 - ✓ Give ORS or SSS in addition to milk feeds.
- ◆ Show her how to make SSS or ORS.
- ◆ Show her how to give SSS or ORS using a cup or cup and spoon.
- ◆ For a child under two years give 50-100ml after each loose stool.
- ◆ For an older child give 100 -200ml after each loose stool.
- ◆ If the child vomits, wait 10 minutes, then give the solution more slowly (eg a teaspoonful every 2-3 minutes).

STEP 2. CONTINUE FEEDING

- ◆ Give plenty of food to prevent malnutrition.
- ◆ Continue to breastfeed frequently.
- ◆ Or if not on the breast, give the usual milk.
- ◆ If the child is already taking solid food continue these.

STEP 3. IF THERE IS MARKED THIRST - GIVE MORE FLUID

You noticed that Sandra was taking only weak tea. This is the way malnutrition can develop. Her mother should not stop giving her milk and other foods.

WHAT SORT OF SOLID FOOD SHOULD YOU RECOMMEND?

PREVENTING MALNUTRITION

- ◆ Give mealie meal porridge or another starchy food, (if possible, with beans, bananas, tomatoes, vegetables, and meat, eggs or fish).
- ◆ Add 1 teaspoonful of cooking oil to each serving.
- ◆ Give freshly prepared foods. Cook and mash the food well.
- ◆ Encourage the child to eat; offer food at least 6 times a day. Many small meals are better than a few big meals.
- ◆ Give an extra meal a day for at least a week after the child has recovered.



WHEN SHOULD MOTHER RETURN TO THE HEALTH FACILITY?

PLAN A (continued)

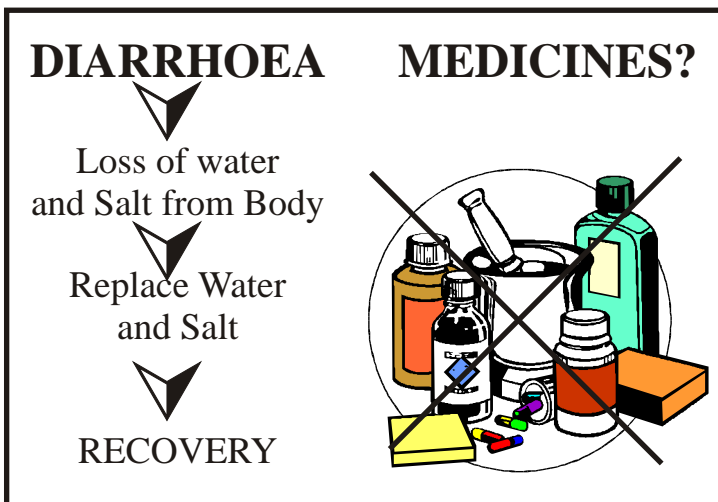
STEP 4 : TELL HER TO COME BACK IF THE CHILD STILL HAS FREQUENT WATERY STOOLS AFTER TWO DAYS OR DEVELOPS ANY OF THE FOLLOWING:

- ◆ REPEATED VOMITING
- ◆ EATING OR DRINKING POORLY
- ◆ FEVER
- ◆ BLOOD IN THE STOOL

STEP 5. CHECK WEIGHT WITHIN 1 MONTH AFTER RECOVERY FROM ILLNESS TO MAKE SURE THE CHILD HAS GAINED BACK LOST WEIGHT.

SANDRA WAS ON MEDICINE FOR HER DIARRHOEA, OBTAINED AT THE CHEMIST. WHAT MEDICINES SHOULD BE GIVEN?

USUALLY NONE!



- ***DRUGS TO STOP DIARRHOEA AND/OR VOMITING SHOULD NOT BE USED IN CHILDREN.*** They are of no proven value. Some are dangerous.
- ***Antibiotics should only be used for dysentery and suspected cholera cases with severe dehydration.*** In other types of diarrhoea they are ineffective and should not be given.
- ***Some traditional remedies can actually be harmful.*** Certain herbal medicines and enemas of unknown content can convert moderate diarrhoea into severe illness. This possibility should always be kept in mind.

WHAT ELSE!

- Check immunisation, and give any that are due - diarrhoea is NOT a contraindication to any immunisation.

[illegible]

- Counsel mother about hygiene, and to use fresh clean water from a tap in or near the home. If fresh clean water is not readily available, water should be boiled, covered and allowed to cool before drinking

TREATING MODERATE DEHYDRATION

A young mother brings two-year old Nelson to the health facility because he has had diarrhoea for two days. He is not vomiting and there is no blood in the stool. You find no danger signs. Nelson is irritable; his eyes look sunken. He drinks eagerly. On pinching it the skin takes one second to go back. The colour comes back to the finger tips in about two seconds. The pulse is 120/minute. The mother has lost the RTH chart; today he weighs 9.5 kg.



HOW DO YOU CLASSIFY NELSON?

- He has some dehydration.
- He has low weight for his age.

WHAT IS YOUR MANAGEMENT PLAN FOR HIM?

Nelson does not show any of the general danger signs. But he has lost a lot of fluid and he must not leave your health facility until his hydration is improved.



Implement PLAN B:

Give fluid and food for some dehydration.



PLAN B - TO TREAT MODERATE DEHYDRATION IN A HEALTH FACILITY

◆ FIRST 4 HOURS

- ✓ Give ORS.
- ✓ Encourage mother to continue breast feeding.
- ✓ If the child wants more ORS than shown, give more.

FLUID REPLACEMENT VOLUMES FOR FIRST 4 HOURS

Weight	Under 6kg	6-10 kg	10-12 kg	12-19 kg
Age*	Up to 4 mths	4-12 mths	12-24 mths	2-5 years
ORS (ml)	200-400ml	400-700ml	700-900ml	900-1200ml

**Use the child's age only when you do not know the weight*

◆ OBSERVE

Observe the child carefully and help the mother give the ORS solution:

- ✓ Show her how much solution to give her child, according to volume (as in the table), using a cup and spoon.
- ✓ Show her how to give it:
 - ✓ For a child under two years give five teaspoons (25ml) every 10-15 minutes, using a cup and teaspoon.
 - ✓ For an older child, frequent sips from a cup.
- ✓ Observe every 30 minutes for problems like vomiting, not drinking or any signs of severe dehydration.
- ✓ If the child vomits, wait 10 minutes and then continue giving ORS, but more slowly, for example, a spoonful every 2-3 minutes.

◆ REASSESS AFTER 4 HOURS, then select PLAN A, B OR C to continue treatment:

- ✓ If there are no signs of dehydration, change to PLAN A.
- ✓ If signs show that some dehydration is still present, repeat PLAN B but start to offer food, milk and juice as prescribed in PLAN A.
- ✓ If signs indicate severe dehydration has appeared, shift to PLAN C.

WHAT DO YOU ADVISE IF THE MOTHER MUST LEAVE BEFORE COMPLETING TREATMENT PLAN B?

- Show her how much ORS to give to finish the four hour treatment at home.
- Give her enough ORS packets to complete rehydration.
- Show her how to prepare SSS.
- Explain to her the four steps in Plan A for treating her child at home:
 - to give SSS or ORS or other fluids until the diarrhoea stops
 - to feed the child, and
 - to bring the child back to the health worker the next day
 - bring the child back to be weighed within one month after recovery from illness.

TREATING SEVERE DEHYDRATION

Mrs Moyo brings Sandra back to the health facility after two days. An aunt has been looking after her. She seems worse - she has vomited twice and passed a large, watery stool. She is not drinking well. Her eyes are more sunken and the skinfold goes back in three seconds. You can feel the pulse; the rate is 152/minute. Her breaths are 48 per minute. They seem deeper than normal.

HOW DO YOU MANAGE HER NOW?

Sandra has severe dehydration, and urgent treatment is required to correct it.



PLAN C - TREATING SEVERE DEHYDRATION AND SHOCK QUICKLY

IF YOU ARE ABLE TO GIVE INTRAVENOUS FLUIDS PROCEED AS FOLLOWS:

1. Commence treatment immediately and continuously assess her (at least every 30 minutes) until she is REFERRED or improved. If it is not possible to transfer her, supply fluid treatment as in the following Table.
2. Insert a naso-gastric tube while you are trying to put up an intravenous drip, giving fluids through the naso-gastric tube as in the following table. If successful with the drip, continue fluids as laid out in the table.
3. Check blood-glucose level with Dextrostix in any child who is severely ill or malnourished. If below 2.2mmol/litre (40ng/ml) give 2ml/kg of 10% dextrose IV.
4. Give the following fluids to resuscitate the child and replace the fluid losses. These fluids amount to 100ml per kg. Then continue with maintenance fluids at 10ml/kg:

FLUID	RESUSCITATION	REPLACEMENT	MAINTENANCE
	First give bolus of 30ml/kg of Ringer's Lactate or normal saline	Then give 70ml/kg of half DD or normal saline	Then give 10ml/kg of half DD

For infant under 12 months:

Over one hour	Over five hours	Hourly until rehydrated (reassess frequently)
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For child older than 12 months:

Over 30 minutes	Over 2 ½ hours	Hourly until rehydrated (reassess frequently)
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5. Reassess the child every 30 minutes. If hydration is not improving, and radial pulse is still weak or not detectable, repeat the resuscitation therapy (BUT DO NOT REPEAT THIS BOLUS/RESUSCITATION THERAPY MORE THAN THREE TIMES).
6. Once drip is up stop naso-gastric feeds.
7. Adjust the rate of maintenance fluids according to the clinical condition.
8. Give ORS (about 5ml/kg/hour) as soon as the child can drink.

WHAT IF YOU CANNOT PUT UP A DRIP? FLUIDS MUST BE GIVEN BY NASO-GASTRIC DRIP!

- REFER the child to hospital immediately whilst continuing rehydration by naso-gastric tube.
- Reassess the child every 30 minutes:
 - if there is repeated vomiting or increased abdominal distension, give the fluid more slowly
 - if hydration is not improving give more fluids.



IF NASO-GASTRIC REHYDRATION IS NOT POSSIBLE?

- Start rehydration by mouth, giving ORS 20ml/kg, and REFER TO HOSPITAL IMMEDIATELY.

SHOCK

WHAT ARE THE SIGNS OF SHOCK IN A DEHYDRATED CHILD?

- ✓ A fast heart rate (above 140/minute)
- ✓ The pulse is difficult to feel
- ✓ The capillary filling time is more than four seconds (peripheral circulatory insufficiency)
- ✓ The breathing may be rapid and sighing

WHAT WOULD YOU DO IF THERE ARE SIGNS OF SHOCK?

Shock is a medical emergency and an adequate circulating blood volume must be restored as rapidly as possible. This can only be achieved by giving fluids into a vein.

- Give a plasma volume expander (Plasmalyte or normal saline).
- Give 20 ml/kg rapidly, then
- Give 2 mmol/kg bicarbonate injected into the drip chamber as a bolus.
- If the response is inadequate give a further 10 ml/kg of fluid.

If you are unable to find a vein an intra-osseous transfusion (a needle placed in a marrow cavity) can be a life-saving emergency measure. This is a simple procedure, if you are trained to do it, and you should request to be shown how.

- Once circulation is restored, proceed with rehydration as in PLAN C.

WHAT FOLLOW-UP CARE WOULD YOU GIVE FOR A DIARRHOEAL ILLNESS?

After five days, ASK

- Has the diarrhoea stopped?
- How many loose stools is the child having per day?

If the diarrhoea has stopped (child having less than three loose stools per day) tell the mother to follow the usual feeding recommendations for the child's age but to give one extra meal every day for a week.

If the diarrhoea has not stopped (child is still having three or more loose stools per day), do a full re-assessment of the child. Treat for any dehydration present. Then REFER to hospital.

WHAT IS PARENTERAL DIARRHOEA?

Some infants presenting with diarrhoea may actually have an infection outside the gut, such as in the **ear, respiratory or urinary tract**. These are important to recognise as the symptoms will not resolve unless the underlying disease is adequately treated. Therefore examine the whole child! Parenteral diarrhoea should be suspected whenever diarrhoea does not clear up within a few days.



BLOOD IN THE STOOL

WHAT IS THE IMPORTANCE OF SEEING BLOOD IN THE STOOL?

Dysentery is an infection of the lower small bowel and colon which results in blood and mucus in the stools.

The causes are bacteria (especially *Shigella*), protozoa (especially amoebae), and worms (especially whipworm). When there is fever and blood, the likeliest cause is bacillary dysentery.

WHAT TREATMENT WOULD YOU GIVE IF THERE IS BLOOD IN THE STOOLS?

- Start Nalidixic acid for *Shigella*, 15mg/kg per dose by mouth four times a day for five days.
- Teach the mother to feed the child and give extra fluids.
(PLAN A - PREVENTING MALNUTRITION)

REFER IF

- the child is less than 12 months old,
- had measles in the past three months,
- there is no improvement in three days or,
- the stool is still bloody

Vuyo is 18 months old. He has had loose frequent stools for two days. He also has a temperature of 39° C.

WHAT COULD BE THE CAUSE AND HOW WOULD YOU PROCEED?

Most children with infectious gastroenteritis do not have a raised temperature. If there is significant fever you should consider the following:

- *Shigella* dysentery, and certain other bowel infections.
Is there blood in the stools?
- An infection outside the gut (parenteral diarrhoea).





- Look for an ear infection.
- Look in the throat for redness, and **ESPECIALLY** for Koplik spots - a sign of measles.
- Test the urine for urinary tract infection.
- **REMEMBER** malaria, in any child with high fever!

If no known cause, or if in doubt, REFER.

WHY IS THE DURATION OF THE DIARRHOEA OF SPECIAL IMPORTANCE?

Acute gastroenteritis is usually a self-limiting disease, clearing up in three to five days. But in a minority of cases severe diarrhoea does not stop.

Persistent diarrhoea is diarrhoea of such severity that hydration support is required for longer than 14 days.

Factors associated with persistent diarrhoea include:

- young age (less than three months)
- low weight for age (lower than the third percentile)
- previous episodes of diarrhoea
- infectious diarrhoea of bacterial origin
 - *E. coli*, *salmonella*, *campylobacter*
- parasites : *cryptosporidium*, *giardia*, *amoeba*
- HIV Infection

WATERY STOOLS

Cheryl, aged 13 months, developed loose watery stools two weeks ago. Her aunt brings her back today because the stools are still very loose and frequent.

HOW WOULD YOU TREAT HER?

Teach the mother to feed Cheryl as in PLAN A.

In addition to this:

- Use only half the usual amount of formula milk and replace the other half with Soya milk OR plain yoghurt OR maas for three days.
- Assure full energy intake by giving six meals per day with added energy.
- Follow-up the child after five days to re-assess:
 - If diarrhoea has not stopped REFER.
 - If diarrhoea has stopped, advise mother according to PLAN A.

REFER TO HOSPITAL IF

- less than six months old
- severely malnourished
- losing weight
- dehydrated, despite treatment

COMPLICATIONS OF GASTROENTERITIS

OEDEMA

8-month old Charlie develops swelling of the feet after a prolonged attack of gastroenteritis.

WHAT IS THE LIKELY REASON?

Swelling (oedema) is a serious complication of severe diarrhoea. It may be caused by:

- Loss of protein from the gut (protein-losing enteropathy) producing low levels of both albumen and globulin in the blood;



OR BY

- Severe protein energy malnutrition (kwashiorkor). This can result when diarrhoea occurs in an already malnourished child. WHICHEVER THE CAUSE, CHARLIE MUST BE REFERRED TO A HOSPITAL. ALSO REFER any child on or below the 60% weight-line (marasmus), who has diarrhoea.
- Provide the mother with ORS and show her how to give him as much as he will drink during the trip to hospital, according to PLAN A.

MALNUTRITION

HOW CAN MALNUTRITION AFTER GASTROENTERITIS BE PREVENTED?

The crucial importance of nutritional rehabilitation after a bout of diarrhoea must be stressed.

- Feeds should be delayed for as brief a period as possible when rehydrating the child, and never for more than 4 hours.
- Should this not be possible, then early REFERRAL is essential.
- The nutritional state of the child should not be allowed to deteriorate. See PLAN A - **PREVENTING MALNUTRITION.**
- After any bout of diarrhoea it is desirable to ensure that the child is getting adequate feeds, an increased energy intake and the protein necessary for growth. Giving at least one additional feed of high energy intake per day for as many days as the child was ill should be encouraged.

HOW CAN GASTROENTERITIS BE AVOIDED?

The following are important community health preventive measures:

- **Water supplies and sanitation**
 - Diarrhoea germs can be avoided by :
 - improving excreta disposal
 - build and use a latrine
 - improving water quality and availability
 - clean and covered

- water storage and if water is not piped boil water for drinking
- improving personal and domestic hygiene - hand-washing with soap
- improving food hygiene - freshly cook or fully reheat all foods before feeding to a young child

Studies suggest that water availability (lots of water) and hygienic behaviour (e.g. hand washing) are more important than water quality (boiled water) in the prevention of gastroenteritis.

- **Breast-feeding**

- Breast-fed children are much less at risk for gastroenteritis infection, especially if exclusively breast-fed to 6 months of age, because of two mechanisms:
 - Low exposure to harmful organisms
 - Immune factors in breast-milk



These factors are of most significance in early infancy and are unlikely to prevent infections in older infants in heavily contaminated environments.

- **Complementary foods**

When additional foods in the diet become necessary (four to six months) the risk of infection is increased. The conditions in which these foods are stored must be improved, as well as the hygiene of preparation and handling. Food should be freshly prepared or recooked before feeding.

TO SUMMARISE

WHAT ARE THE MAIN AIMS OF TREATMENT OF GASTROENTERITIS?

- To replace fluid and electrolyte loss in the acute phase.
- To prevent nutritional deterioration by feeding during and after illness.

REMEMBER!

- IMMUNISE EVERY SICK CHILD AS NEEDED!
- WEIGH A CHILD REGULARLY AND PLOT THE WEIGHT ON THE RTH CHART
- GIVE EXTRA FOOD TILL WEIGHT GETS BACK TO THE LINE OF GROWTH THE CHILD FOLLOWED BEFORE THE ILLNESS

FURTHER READING

Coovadia HM, and Wittenberg D, (eds). Paediatrics and Child Health: A Manual for Health Professionals in the Third World. 4th Edition. Oxford University Press. Cape Town. 1998. Pgs 155 -161.

Kibel MA, and Wagstaff L, (eds). Child Health for All: A Manual for Southern Africa. 2nd Edition. Oxford University Press. Cape Town. 1996. Pgs 233- 241.

Ireland ID, Power DI, Woods DL, and Hoogenhout DH. Paediatric Primary Health Care. Oxford University Press. Cape Town. 1994. Pgs 176 -181.

WHO/NUT/98.1 Complementary feeding of young children in developing countries: a review of current knowledge.

BEFORE THE CHILD GOES HOME FROM THE CLINIC, MAKE SURE THAT

- *HE OR SHE IS FULLY IMMUNISED*
- *THE MOTHER HAS RECEIVED NUTRITIONAL ADVICE*
- *THE MOTHER CAN REPEAT THE INSTRUCTIONS IN HER OWN LANGUAGE*
- *THE MOTHER KNOWS WHEN TO COME BACK*



ANSWERS

- | | | |
|-----|---|---|
| 1 | - | F |
| 2 | - | T |
| 3 | - | T |
| 4 | - | F |
| 5 | - | F |
| 6 | - | T |
| 7 | - | T |
| 8 | - | T |
| 9 | - | F |
| 10. | - | T |
| 11. | - | T |
| 12. | - | F |
| 13. | - | F |
| 14. | - | T |
| 15. | - | T |

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